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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/667,382	09/23/2003	Akira Ishii	117231	1934

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EXAMINER	
VO, QUANG N	

ART UNIT	PAPER NUMBER
2625	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/667,382	ISHII, AKIRA	
	Examiner	Art Unit	
	Quang N. Vo	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 September 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *11/7/03;11/20/03;6/19/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-10, 13-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Kitagawa et al. (Kitagawa) (US Patent 5055923).

With regard to claim 1, Kitagawa discloses an image forming apparatus for digitally reproducing a color image using a screen set consisting of a halftone screen for each color, wherein a first-color halftone screen and a second-color halftone screen in said screen set satisfy a relationship that first vectors (column 1, lines 44-57), each being either one of two screen vectors in a spatial frequency domain defined by basis vectors in two directions of a halftone dot pattern in the first-color or second-color halftone screen, are parallel to each other (column 2, lines 15-46), and second vectors, each being the other one of the two screen vectors, are not parallel to each other (column 7, lines 54-57).

With regard to claim 2, Kitagawa discloses wherein said first-color halftone screen and said second-color halftone screen further satisfy a relationship that said first vectors are equal in magnitude (column 5, lines 5-20).

With regard to claim 3, Kitagawa discloses wherein at least one of said first-color and second-color halftone screens is a non-orthogonal screen (column 2, lines 61-63).

With regard to claim 4, Kitagawa discloses wherein a third-color halftone screen and a fourth-color halftone screen satisfy a relationship that second vectors, each being either one of two screen vectors in a spatial frequency domain defined by basis vectors in two directions of a halftone dot pattern in the third-color or fourth-color halftone screen, are parallel to each other as well as equal in magnitude, and first vectors, each being the other one of the two screen vectors, are not parallel to each other (column 4, lines 35-46 and figures 1A-1D).

With regard to claim 5, Kitagawa discloses wherein said first vector of said first-color halftone screen, said first vector of said third-color halftone screen, and said second vector of said second-color halftone screen form an closed triangle, and said second vector of said first-color halftone screen, said first vector of said fourth-color halftone screen, and said second vector of said third-color halftone screen form an closed triangle (column 4, lines 35-46 and figures 1A-1D).

With regard to claim 6, Kitagawa discloses wherein said first vector of said first-color halftone screen, said first vector of said third-color halftone screen, and said second vector of said second-color halftone screen form an closed triangle, and said second vector of said first-color halftone screen, said first vector of said fourth-color halftone screen, and said second vector of said third-color halftone screen form an closed triangle (column 4, lines 35-46 and figures 1A-1C).

With regard to claim 7, Kitagawa discloses wherein said second vector of said first-color halftone screen matches either one of two screen vectors of a third-color halftone screen in said screen set (figures 1A and 1C).

With regard to claim 8, Kitagawa discloses wherein a secondary spectrum represented by the sum or the difference of the two screen vectors of said first-color halftone screen matches either one of two screen vectors of a fourth-color halftone screen in said screen set (column 4, lines 35-46 and figures 1A and 1D).

With regard to claim 9, Kitagawa discloses wherein said screen set comprises four color halftone screens, and the four color halftone screens have a relationship that two closed triangles can be formed using two screen vectors of each of the four color halftone screens, without a remainder (column 4, lines 35-46 and figures 1A-1D).

With regard to claim 10, Kitagawa discloses wherein in a case where directions of halftone dot arrangement match between said first-color and second-color halftone screens, halftone dot intervals in the matched direction of the first-color halftone screen differ from the halftone dot intervals in the matched direction of the second-color halftone screen (column 7, lines 54-65 and figure 3D (dm3 =/ dc3 =/ dk3)).

With regard to claim 13, Kitagawa discloses an image forming method for digitally reproducing a color image, comprising the steps of: generating halftone images from input color images using a screen set consisting of multiple color halftone screens, wherein a first-color halftone screen and a second-color halftone screen in said screen set satisfy a relationship that first vectors (column 1, lines 44-57), each being either one of two screen vectors in a spatial frequency domain defined by basis vectors in two directions of a halftone pattern of the first-color or second-color halftone screen, are parallel to each other, and second vectors, each being the other one of the two screen

vectors, are not parallel to each other, and reproducing said input color images by combining said halftone images (column 2, lines 15-26, column 7, lines 54-57).

With regard to claim 14, Kitagawa discloses wherein said first-color halftone screen and said second-color halftone screen further satisfy a relationship that said first vectors are equal in magnitude (column 5, lines 5-20).

With regard to claim 15, Kitagawa discloses wherein at least one of said first-color and second-color halftone screens is a non-orthogonal screen (column 2, lines 61-63).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 11, 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitagawa as applied to claims 1-10, 13-15 above, and further in view of Delabastita (US Patent 5155599).

With regard to claim 11, Kitagawa differs from claim 11, in that he does not teach said screen set comprises four color halftone screens, and among a total of 8 primary spatial frequency spectra each corresponding to one of the screen vectors for each color and a total of 8 secondary spatial frequency spectra each corresponding to the sum or the difference of the screen vectors for the same color, the number of different

spatial frequency spectra contained in a band of from the minimum frequency to the maximum frequency of said 8 primary spatial frequency spectra is less than 8.

Delabastita discloses screen set comprises four color halftone screens, and among a total of 8 primary spatial frequency spectra each corresponding to one of the screen vectors for each color and a total of 8 secondary spatial frequency spectra each corresponding to the sum or the difference of the screen vectors for the same color, the number of different spatial frequency spectra contained in a band of from the minimum frequency to the maximum frequency of said 8 primary spatial frequency spectra is less than 8 (column 7, lines 28-40).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Kitagawa to include screen set comprises four color halftone screens, and among a total of 8 primary spatial frequency spectra each corresponding to one of the screen vectors for each color and a total of 8 secondary spatial frequency spectra each corresponding to the sum or the difference of the screen vectors for the same color, the number of different spatial frequency spectra contained in a band of from the minimum frequency to the maximum frequency of said 8 primary spatial frequency spectra is less than 8 as taught by Delabastita. It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Kitagawa by the teaching of Delabastita to provide a screening system that eliminates second order Moire (column 7, lines 14-15).

With regard to claim 12, the subject matter is similar to claim 11. Therefore, the rejection on claim 12 is the same as the rejection on claim 11.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Quang N. Vo whose telephone number is 5712701121. The examiner can normally be reached on 7:30AM-5:00PM Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Twyler M. Lamb can be reached on 5712727406. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Quang N. Vo 5/2/07
Patent Examiner

TWYLER LAMB
SUPERVISORY PATENT EXAMINER